Teton 1965

FOREST INSECT CONDITIONS ON THE TETON NATIONAL FOREST

1965

The following is an account of the most important forest insect problems encountered on the Teton National Forest this year. Information was compiled from aerial survey data and concentrated on the ground biological evaluations to supplement the aerial observations.

The major forest insect problems this year were the mountain pine beetle, Douglas-fir beetle, and a defoliator complex. Briefly, mountain pine beetle populations continued at high epidemic levels with well over a million trees now infested. Infestation centers have spread farther northward in the Teton Wilderness almost to the southern border of Yellowstone National Park. Active Douglas-fir beetle infestations are scattered throughout the Forest with many infestation centers occurring in small 5 to 15 tree groups in widely scattered areas. A defoliator complex caused light to heavy defoliation of lodgepole pine in three areas. A more detailed discussion of these problems follows.

Mountain pine beetle, Dendroctonus monticolae Hopk.

During 1965 mountain pine beetle populations continued at an epidemic level throughout most of the Forest. Aggressive control work in the infestation south of the Buffalo River has reduced the number of infested trees from 181,000 in 1964 to 110,000 in 1965. Elsewhere, however, particularly to the north of the Buffalo River, the infestation has increased in both intensity and extent. In Lava and Pacific Creek, outside of the Teton Wilderness area, nearly 120,000 infested trees were left untreated. Inside the Wilderness area there are an estimated one million infested trees. Less serious, but nevertheless, destructive infestations persist in the Hoback River Drainage. New infestation centers of varying intensities are scattered throughout the Gros Ventre drainage.

Data collected in the spring of 1965 showed that mortality of bark beetle broods established the previous summer and fall was high in localized areas, i.e., Lily Lake area, Dell Creek and West Shoal, but the surviving brood was sufficient to sustain epidemic conditions, resulting in an increase in number of trees attacked in the fall.

A variety of brood conditions were observed on the Forest both last and this year. Normally, new attacks are made in the summer, the broods overwinter as eggs and young larvae, continue development with the onset of warm weather the following spring, become adults, and attack new trees in the summer and fall. Exceptions to this were noted. In some instances, female adults attacked trees late last fall, ceased egg laying, overwintered, and then extended their galleries and continued egg deposition in the spring. The development period of the broods resulting from the fall eggs was normal, for they emerged and made new

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attacks during the normal flight period that summer. However, broods developing from the spring eggs, either emerged and made new attacks late in the fall or remained in the dead trees as mature larvae, pupae or callow adults, which will emerge early in 1966. Thus, it is theoretically possible to have three flight periods, the first being in the spring from mature broods overwintering in dead trees; the second being fall flights and subsequent new attacks resulting from spring egg deposition; and finally, normal summer flights. We have yet to observe the first two phenomena first hand, but this does not discount the possibility that they could occur. They would be, however, of little significance relative to the main flight period. We believe them to be unimportant for the following reasons: Mature broods overwintering in dead trees would be unduly exposed to mortality caused by parasites, predators, desiccation, and most important, adverse temperatures. If spring flights did occur, it would be by those beetles that ceased egg laying in the fall, overwintered, and prior to or during gallery extension in the spring, emerged and either reattacked the same tree or entered a nearby tree. Since the initial beetle "blowup" on the Teton, we have observed this phenomenon only four times. Late fall attacks are also highly improbable, for if the beetles do not emerge by early fall, they probably overwinter in the dead trees.

In most instances, comparable biological samples were taken from the same general areas during the fall of 1964-1965. A list of areas examined showing respective brood counts, attack densities and attack ratios follows:

Areas	Avg. Fall Brood Density/Sq. Ft.		Attacks Per Sq. Ft.		Attack Ratio	Trend Prediction	
	1965	1964	1965	1964	1965	Condition	Trend
Arizona Creek	378.3	213.3	11.0	10.0	1:1	Epidemic	Inc.
Pacific Creek	290.8	140.0	8.8	6.8	>1:1	Epidemic	Inc.
Lava Creek	270.0	221.2	14.3	8.8	>1:1	Epidemic	Inc.
Turpin Creek	367.2	-	8.6	-	>1:1	Epidemic	Inc.
Lily Lake	289.2	105.6	10.1	8.0	≤1:1	Epidemic	Dec.
Ditch Creek	450.0	130.8	16.6	8.0	≤1:1	Epidemic	Dec.
Kismet Peak	224.8	224.0	12.2	8.0	>1:1	Epidemic	Inc.
Dell Creek	334.4	189.6	10.1	9.2	>1:1	Epidemic	Inc.
N.Fk. Fisherman Cr.	234.4	232.9	10.6	12.4	>1:1	Epidemic	Inc.
Shoal Creek	235.0	158.4	10.3	10.8	≤1:1	Epidemic	Dec.
Greased Dog Creek	172.5	-	16.2	-	<1:1	Epidemic	Static

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From data collected and through past experience we have found that a fall brood density of 180 per square foot is about the breaking point between epidemic and endemic conditions in lodgepole pine stands in Region Four.

These data show an overall increase in 1965 brood densities over 1964 brood densities. Attacks per square foot increased in all areas except in the North Fork of Fisherman and West Shoal Creeks, and these counts were only slightly lower than the number of 1964 attacks but still high enough to be epidemic.

Operational surveys show a decrease in the number of newly attacked trees in Ditch and Lost Creek and on Antelope Mountain. These areas have received control treatments intermittently since 1957. Data taken from Ditch Creek showed exceptionally high brood and attack densities, but an attack ratio of less than one-to-one which may be a reflection of the condition of the stand and a possible lack of suitable host trees. Past beetle activity has considerably reduced the number of host trees. Continuing control efforts, together with natural factors and the lack of favorable host material should result in a further decline in these areas during 1966.

Other areas with reduced attack ratios are Greased Dog and Shoal Creeks and Lily Lake. Except for Greased Dog Creek, these areas contained p epidemic broods, but the favorable attack ratios indicate a downward trend, consequently, it is expected that fewer trees will be killed next year. Chemical control work and the removal of infected as well as host trees through timber sales may account for the downward trends in Lily Lake and Shoal Creek areas but the reason for the decline in Greased Dog Creek is unknown.

The infestation in the upper Hoback Drainage continues unabated. Considerably more trees were killed this year than last.

Aerial surveys reported the following areas of beetle activity in the Hoback Drainage:

Area	Aerial Survey Estimates of Current Faders
Jack Creek to F.S. Patrol Cabin-Gros Ventre	2,000+
Soda Lake	50 - 100
Newlin Cache Creek	300 - 400
Granite Creek	5,500 - 7,500
Little Granite Creek	60 - 80
Swift Creek	100 - 200
Rilong Draw - Parody Draw	10,000+
Coyote Creek	500 - 600
Cliff Creek	300 - 400
Lime Creek	150 - 200
Bryan Flat	100 - 150
Willow Creek	3,000 - 3,500
Lick Creek	60 - 75
Sour Dough Creek	100 - 125

No ground evaluations were made in these areas in the fall of 1965, however, considering trends elsewhere it is likely that many of these areas will show increased buildup ratios.

Aerial surveys estimated approximately 30,000 new faders on Bureau of Land Management, State and Private lands in Beaver Creek and the upper Hoback River, on and adjacent to Kismet Peak and Signal Hill. This infestation has continued to extend itself onto the Bridger and Teton National Forests. In a few localized areas, the infestation has run its course by killing most of the host material. Except for these areas, however, favorable host trees are still available and biological evaluation data indicates no letup in severity or extent of the infestation next year.

The primary movement of the beetle in the northwestern part of the Forest has been northward. Infestations have developed and expanded rapidly in most of the drainages north of the Buffalo River in the Teton Wilderness area. These infestations will persist until natural control factors take effect, or the beetle simply "eats itself" out of type. Persistent, growing epidemics continue to deplete lodgepole stands in the Pilgrim Mountain, Bailey, Arizona and Lizard Creek areas acting as a potential reservoir of beetles for the presently beetle free lodgepole stands of Yellowstone National Park to the north. Small but potential infestations also exist near the Yellowstone border in Coulter, Rodent, and Wolverine Creeks.

Protection of these stands to the north and in the high-use recreation areas bordering Jackson Lake in Teton Park is of critical importance. Natural measures have had little, if any, effect in reducing the population this year and no change in status is predicted for 1966. No significant additional mortality of the overwintering broods due to unfavorable temperatures is expected to occur, but this will not be known until next spring. Unless prompt and effective control action is taken along the western edge of the infestation, movement into the stands to the north and west is imminent.

Douglas-fir Beetle, Dendroctonus pseudotsugae Hopk.

Aerial observers noted active Douglas-fir beetle infestations scattered throughout the Teton National Forest. The majority of infestation centers occur in small 5 to 15 tree groups in widely scattered areas.

The most significant areas of infestations, as delineated from the air, follow:

Area	Number of Trees Attacked
Colter Canyon	200
Cache Creek	180
Horse Creek	150
Bull-Cow Creek	40
Granite Creek	80
Moran Canyon	30-40
Webb Canyon	30-40
Adams Creek	50

In the larger infestations the ratio of new "faders" to old was about 1:1. Overall fading ratio in the smaller tree groups approximated 1:3. Most of the smaller infestations observed appeared to be dying out.

Because of manpower and time limitations, and inaccessibility of most of the infestations, it was not possible to perform ground evaluations this year, hence trend predictions based on biological data cannot be made. Past experience, however, with Douglas-fir beetle activity and the nature of the present infestations coupled with similar conditions elsewhere provide some indication of the course of the present situation. In those areas where the number of old faders exceeds the new, (the smaller infestations), beetle kill will probably continue to decline in 1966. In the larger areas, where there is sufficient host material nearby, and the estimated current fading ratio was 1:1, or more, beetle populations and subsequent kill is expected to remain static or increase only slightly. Every possible effort will be made to make a more thorough evaluation of the most serious infestations next year.

Defoliator Complex - Lodgepole pine

Defoliators of lodgepole pine have increased on the Teton and in the Intermountain Region generally since 1961. Species which have been collected from lodgepole pine defoliated areas are: jack pine budworm, Choristoneura pinus Freeman; sugar pine tortrix, C. lambertiana (Busck); pine needle sheath miner, Zelleria haimbachi Busck; lodgepole pine needle miner, Recurvaria milleri Busck; and two tentatively identified as a pine needle tier, Argyrotaenia tabulana Free., and the pine tube moth Argyrotaenia pinatubana Kearf.

Defoliation in the lodgepole pine areas was exceedingly variable. One area in Game Creek varied from light to heavy defoliation throughout the entire drainage.

In Coburn Creek defoliation varied from light to moderate in two widely separated areas of about 400 acres each. Approximately 40 acres of lodgepole pine southwest of Phelps Lake was lightly defoliated.

Feeding damage was confined mostly to the new growth. Sustained feeding will stunt and deform the trees but we have yet to observe mortality caused by this insect complex. Historically, outbreaks are known to be relatively serious one year, then either subside the following year or move into new areas.